Functional Outcomes Following Total Hip Arthroplasty

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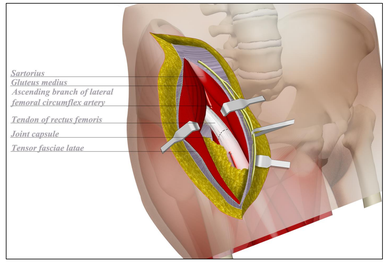
Introduction:

- The number of hip arthroplasty procedures performed has increased significantly in recent decades in the United States from 138,700 in 2000 to an estimated 310,800 in 2010.[1]
- Recent studies have investigated patient outcomes following total hip arthroplasty (THA) based on surgical approach.
- The anterior approach has been associated with a lower rate of dislocation and faster recovery in the first six to twelve post-operative weeks, but no significant advantages have been found beyond three months post-operatively.[2-4]
- Though self-reported outcomes are commonly utilized, functional measures represent a novel and objective technique for comparing outcomes after THA with respect to surgical approach.

Methods:

- Patients undergoing primary total hip arthroplasty between April 2015 and December 2018 were prospectively enrolled in the cohort and grouped by surgical approach – 379 posterior, 400 anterior.
- Patients were evaluated pre-operatively and at both three and twelve months post-operatively.
- Perioperative data included surgical approach, operative time, estimated blood loss, and length of hospital stay.
- Outcomes were measured using the Hip Dysfunction and Osteoarthritis Outcome Score (HOOS, JR.), timed up and go (TUG) test, 30 second sit to stand test (30 sec STS), and four-meter walk test (4MWT).
- Adverse events that were recorded included trochanteric fracture, acetabular fracture, post-operative dislocation, post-operative infection, and wound healing problems.
- Mean differences between the direct anterior and posterior groups were tested using independent t-tests (normality assumption satisfied).



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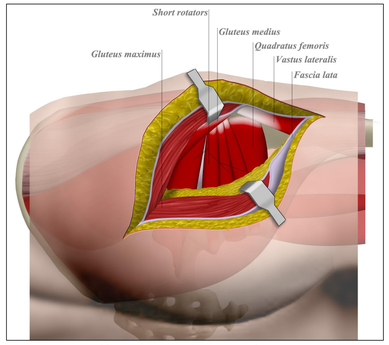

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Patient Demographics			
	Anterior THA Average	Posterior THA Average	P value
Age	62.3	60.9	0.904
Gender (Male)	181	189	0.677
Gender (Female)	219	190	0.151
Diabetes Mellitus (% of patients)	7.50	10.8	0.440
History of Deep Vein Thrombosis	6.75	7.39	0.865
Smoker	11.3	9.76	0.745
BMI	27.1	29.3	0.769

Changes at 3 months post-op			
	Anterior THA Average	Posterior THA Average	P value
HOOS Jr Score	8.59	7.65	0.045
Time up and go (sec)	2.66	2.33	0.519
30 Second sit to stand (# of reps)	2.49	2.71	0.638
4-Meter walk test (sec)	1.18	1.23	0.820

Changes at 1-year post-op			
	Anterior THA Average	Posterior THA Average	P value
HOOS Jr Score	8.52	8.51	0.99
Time up and go (sec)	3.15	2.86	0.71
30 Second sit to stand (# of reps)	3.83	3.99	0.85
4-Meter walk test (sec)	1.23	1.19	0.91

Adverse Events			
	Anterior THA Average	Posterior THA Average	P value
Trochanteric Fracture (%)	2.00	1.06	0.25
Acetabular Fracture	0.00	0.30	0.32
Post-Operative Dislocation	1.25	2.60	0.20
Post-Operative Infection	0.50	2.11	0.06
Post-Operative wound complication	0.75	1.10	0.71

Results:

- Patient demographics showed the two groups were similar.
- Self-reported outcomes and functional outcome scores improved among patients in both approach groups at both three and twelve months post-operatively.
- The anterior group showed significant improvement in HOOS, JR. score compared to the posterior group at three months postoperatively, but no difference existed at twelve months postoperatively.
- There were no significant differences in functional outcome between the two approach groups at three or twelve months postoperatively.
- There was no significant difference in frequency of adverse events between the two approach groups at three or twelve months postoperatively.

Conclusion:

- These data suggest anterior and posterior approaches are equally effective in restoring function among THA patients long-term.
- The anterior approach may have improved patient satisfaction in the early post-operative period.
- Surgeon preference is likely the most important factor in determining outcome following THA.

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References:

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